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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,493	03/08/2001	Hiroshi Moriya	500.3930X00	2194

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ARLINGTON, VA 22209

EXAMINER

QUINTO, KEVIN V

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/800,493

Applicant(s)

MORIYA ET AL.

Examiner

Kevin Quinto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: NATHAN J. FLYNN

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-6 and 14-18 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

2. Claim 14 is objected to because of the following informalities: the final phrase "and at least one element selected from the group consisting of nickel and titanium as an adding element in an amount of 10 atom % or more" is not on a new line. The examiner believes that this phrase applies to both parts "(a)" and "(b)" and has interpreted it in this manner. However in its current form, it appears that this final phrase is a part of part "(b)." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 15 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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5. The examiner is unable to find the portion of the specification which describes an electroconductive film, which contains palladium, nickel, cobalt, or titanium as a main constituting element, and is disposed between one of the first or second capacitor electrodes and the insulating film. The applicant has defined "main constituting element" as an element contained in the largest amount (p.18, lines 16-20). The examiner believes that the use of this term with regard to a structure implies that there is also an adding element present in the same structure. So far as understood by the examiner, the electroconductive film is labeled "14" in figure 1.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 14, and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumagai et al. (USPN 6,521,932 B1).

8. In reference to claims 1, 2, 3, 4, 5, 6, 17, and 18, Kumagai et al. (USPN 6,521,932 B1, hereinafter referred to as the "Kumagai" reference) discloses a similar device. Figure 1 illustrates a semiconductor device, which is equipped with a capacitor for storing information, on a substrate (1). There is a first capacitor electrode (13) on

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the substrate (1). An oxide film (12) is in contact with the first capacitor electrode (13). Kammerdiner et al. (USPN 5,142,437) has described PZT as an oxide film (column 1, lines 26-29). The oxide film (12) in figure 1 of Kumagai is PZT. A second capacitor electrode (11) is in contact with oxide film (12). An insulating film (25) is in contact with the second capacitor electrode (11). The insulating film (25) is made of silicon oxide (column 10, lines 6-7 and column 9, lines 6-12); thus meeting the limitation "an insulating film containing silicon as a main constituting element." The second capacitor electrode (11) can be made of ruthenium, iridium, platinum, ruthenium oxide, or iridium oxide as its main constituting element (column 7, lines 23-31 and column 9, lines 40-49). An adding element such as nickel or titanium is present in the second capacitor electrode at 0.14-25 atom % or more (column 7, lines 23-31 and column 9, lines 40-49). The elected species of figure 1 in the applicant's specification cites a desirable range of 10-25 atom % or more (p. 18, lines 4-16). The examiner believes that the Kumagai reference anticipates the applicant's invention with sufficient specificity (see MPEP 2131.03 - Anticipation of Ranges). Furthermore Kumagai makes it clear that this composition (column 5, lines 40-46) is disclosed as enhancing adhesiveness to the insulating film.

9. With regard to claim 14, the process utilized to fabricate the device in figure 1 of Kumagai inherently meets this claim.

10. In reference to claim 16, Kumagai (USPN 6,521,932 B1) discloses a similar device. Figure 1 illustrates a semiconductor device, which is equipped with a capacitor for storing information, on a substrate (1). There is a first capacitor electrode (13) on

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the substrate (1). An oxide film (12) is in contact with the first capacitor electrode (13). Kammerdiner et al. (USPN 5,142,437) has described PZT as an oxide film (column 1, lines 26-29). The oxide film (12) in figure 1 of Kumagai is PZT. A second capacitor electrode (11) is in contact with oxide film (12). An insulating film (25) is formed outside of the first capacitor electrode (13) and the second capacitor electrode (11). The insulating film (25) is made of silicon oxide (column 10, lines 6-7 and column 9, lines 6-12); thus meeting the limitation "an insulating film containing silicon as a main constituting element." The second capacitor electrode (11) can be made of ruthenium, iridium, platinum, ruthenium oxide, or iridium oxide as its main constituting element (column 7, lines 23-31 and column 9, lines 40-49). An adding element such as nickel or titanium is present in the second capacitor electrode at 0.14-25 atom % or more (column 7, lines 23-31 and column 9, lines 40-49). Claim 16 cites a range "of more than about 15 atom %." The examiner believes that the Kumagai reference anticipates the applicant's invention with sufficient specificity (see MPEP 2131.03 - Anticipation of Ranges). Furthermore Kumagai makes it clear that this composition (column 5, lines 40-46) is disclosed as enhancing adhesiveness to the insulating film.

11. Claims 1-6, 14, and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumagai et al. (USPN 6,521,932 B1).

12. In reference to claims 1, 2, 3, 4, 5, 6, 17, and 18, Kumagai (USPN 6,521,932) discloses a similar device. Figure 6 illustrates a semiconductor device, which is equipped with a capacitor for storing information, on a substrate (1). There is a first capacitor electrode (13) on the substrate (1). An oxide film (12) is in contact with the

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first capacitor electrode (13). Kammerdiner et al. (USPN 5,142,437) has described PZT as an oxide film (column 1, lines 26-29). The oxide film (12) in figure 6 of Kumagai is PZT. A second capacitor electrode (11) is in contact with oxide film (12). An insulating film (25) is in contact with the second capacitor electrode (11). The insulating film (25) is made of silicon oxide (column 10, lines 6-7 and column 9, lines 6-12); thus meeting the limitation "an insulating film containing silicon as a main constituting element." The first (13) and second (11) capacitor electrodes can be made of ruthenium, iridium, platinum, ruthenium oxide, or iridium oxide as its main constituting element (column 11, lines 21-31). An adding element such as nickel or titanium is present in the second capacitor electrode at 0.14-25 atom % or more (column 11, lines 21-31). The elected species of figure 1 in the applicant's specification cites a desirable range of 10-25 atom % or more (p. 18, lines 4-16). The examiner believes that the Kumagai reference anticipates the applicant's invention with sufficient specificity (see MPEP 2131.03 - Anticipation of Ranges). Furthermore Kumagai makes it clear that this composition (column 5, lines 40-46) is disclosed as enhancing adhesiveness to the insulating film.

13. With regard to claim 14, the process utilized to fabricate the device in figure 1 of Kumagai inherently meets this claim.

14. In reference to claim 16, Kumagai (USPN 6,521,932 B1) discloses a similar device. Figure 6 illustrates a semiconductor device, which is equipped with a capacitor for storing information, on a substrate (1). There is a first capacitor electrode (13) on the substrate (1). An oxide film (12) is in contact with the first capacitor electrode (13). Kammerdiner et al. (USPN 5,142,437) has described PZT as an oxide film (column 1,

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lines 26-29). The oxide film (12) in figure 6 of Kumagai is PZT. A second capacitor electrode (11) is in contact with oxide film (12). An insulating film (25) is formed outside of the first capacitor electrode (13) and the second capacitor electrode (11). The insulating film (25) is made of silicon oxide (column 10, lines 6-7 and column 9, lines 6-12); thus meeting the limitation "an insulating film containing silicon as a main constituting element." The first (13) and second capacitor electrodes (11) can be made of ruthenium, iridium, or platinum as its main constituting element (column 11, lines 21-31). An adding element such as nickel or titanium is present in the second capacitor electrode at 0.14-25 atom % or more (column 11, lines 21-31). Claim 16 cites a range "of more than about 15 atom %." The examiner believes that the Kumagai reference anticipates the applicant's invention with sufficient specificity (see MPEP 2131.03 - Anticipation of Ranges). Furthermore Kumagai makes it clear that this composition (column 5, lines 40-46) is disclosed as enhancing adhesiveness to the insulating film.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (703) 306-5688. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

KVQ  
May 4, 2003